

Extracorporeal shock waves lithotripsy in the treatment of urinary lithiasis - particular situations

PhD student: BRAD ALEXANDRU-BOGDAN

PhD coordinator: OȘAN VIRGIL GHEORGHE

Urinary lithiasis can be defined as a consequence of changing the normal crystallization conditions of the urine in the urinary tract.

Regarding the therapeutic methods we have the following possibilities: conservative treatment, extracorporeal shock waves lithotripsy, endourology and open surgery.

ESWL (Extrakorporale Stoss Wellen Lithotripsie) was introduced into medical practice about 40 years ago (1980), in Germany.

The main aim of this research was to emphasize the role of extracorporeal shock waves lithotripsy in urological practice, trying to underline its importance in certain particular situations, such as single kidneys, malformed kidneys but also in the pediatric patient.

In the first study we evaluated the particularities and efficiency of ESWL in children. In order to accomplish this, we included a number of 54 patients, trying to identify an ideal profile of the pediatric patient with urinary lithiasis who can benefit from extracorporeal shock waves lithotripsy, taking into account the experience of two clinical departments of urology in Romania (Tîrgu-Mureș and Iasi). In our study, the incidence of renal-ureteral calculi is significantly higher in girls, (68.5%), compared to boys (31.5%). 83.3% of patients showed a favourable outcome after treatment and the remaining 16.7% showed minimal complications. The presence of complications and remaining calculi was correlated to children age. The overall rate of stone free was 88.9 %. For calculus of 8.5mm only one ESWL session is recommended. We concluded that the high percentage of cases with favourable outcome indicate that extracorporeal shock wave lithotripsy treatment is effective, considering the minimal cost, minimal invasiveness, repeatability and no need for general anaesthesia.

In the second study we tried to identify the place of ESWL in the treatment of urinary lithiasis in patients with renal malformations. Thus, we conducted a research for a period of 10 years, being included in the study 118 patients with different renal abnormalities and associated lithiasis, highlighting a global rate of stone free of 71.77% and a very small degree of associated complications, concluding the fact that extracorporeal lithotripsy is the treatment of choice in these situations for multiple reasons.

In the third study we evaluated the efficacy of ESWL in patients with lithiasis on solitary kidney (congenital, functional or surgical). There were included 203 patients who met the inclusion criteria, finally highlighting that although there are ongoing discussions about the optimal treatment in these patients, given the good progress and the high success rate, extracorporeal shock waves lithotripsy is the right therapy for this condition if the indication is correct and it is performed by a urologist with extensive experience in this field, in a center with alternative treatment possibilities.

Evaluating all the data from the three studies, we consider that we can say with certainty that extracorporeal lithotripsy with shock waves represents the treatment of choice for the reno-ureteral

lithiasis in particular situations (children , malformed kidneys and solitary kidney) for the following reasons:

- treatment is non-invasive;
- it is repeatable if necessary;
- does not require anesthesia;
- complications are relatively rare and minor;
- patients are usually compliant for this type of procedure;
- the stone-free rate is high;
- the patient's hospital stay is short;
- it can also be performed for lithiasis on solitary kidney;
- in case of failure, the calculi can be removed by other minimally-invasive procedures;
- antibiotic treatment is not required;
- family and socio-professional reintegration of patients is rapid;
- the mortality associated with the procedure is extremely low;
- the cost of the procedure is a low one.

The main original aspect of the thesis is the fact that in the specialized literature there are extremely few papers that deal so exhaustively with three of the particular situations in which extracorporeal shock waves lithotripsy can be performed as a treatment of reno-ureteral lithiasis: children, malformed kidneys and solitary kidney.